UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 94246

ABANDONED RR SOUTH OF CEDAR

OVER THE

MISSISSIPPI RIVER

DISTRICT 5 - HENNEPIN COUNTY, CITY OF MINNEAPOLIS

PREPARED FOR THE

MINNESOTA DEPARTMENT OF TRANSPORTATION

BY

COLLINS ENGINEERS, INC.

JOB NO. 5221 (CEI 18A)

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure unit inspected at Bridge No. 94246, Pier 4, was found to be in good condition below water with no defects of structural significance. Overall, the conditions at the bridge have not changed appreciably since the last inspection. The steel sheeting encasement exhibited moderate surface corrosion with no appreciable loss of section. The timber fender system protecting Pier 4 was in fair to at times poor condition with some areas of failed connections, missing members, and impact damage. The channel bottom was stable with no evidence of significant scour or appreciable changes since the previous inspection.

INSPECTION FINDINGS:

(A) The steel sheeting encasing the concrete pier below water displayed a uniform 1/8 inch layer of moderate corrosion, random 1 inch diameter rust nodules, and random 1/8 inch deep pitting.

(B) The timber fenders showed signs of moderate decay and rot at the waterline along with some failed connections, missing members, and impact damage.

RECOMMENDATIONS:

(A) Depending on the proposed future use of the structure, consideration can be given to replacing the missing, deteriorated and damaged timber fender components during normal maintenance operations.

(B) Reinspect the submerged substructure unit at the normal maximum recommended (NBIS) interval of five (5) years.

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Daniel G. Stromberg

Date 6/30/2008 Registration No. 21491

Respectfully submitted,

COLLINS ENGINEERS, INC.

Daniel G. Stromberg
Registered Professional
Engineer, State of Minnesota

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

1. BRIDGE DATA

Bridge Number: 94246

Feature Crossed: Mississippi River

Feature Carried: Abandoned RR South of Cedar

Location: District 5 - Hennepin County, City of Minneapolis

Bridge Description: The superstructure consists of a steel deck truss over seven spans. The superstructure is supported on reinforced concrete abutments and piers. Plans indicate that the pier and abutment footings are spread footings bearing on sandstone. The abutments and piers are numbered 1 through 8 from east to west.

2. INSPECTION DATA

Professional Engineer/Team Leader: Daniel G. Stromberg, P.E., S.E.

Dive Team: Todd Demski, John J. Loftus, Valerie Roustan.

Date: August 30, 2007

Weather Conditions: Sunny, ± 65^{o} F

Underwater Visibility: 0.5 Feet

Waterway Velocity: 1.0 f.p.s.

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Pier 4

General Shape: The pier consists of a rectangular reinforced concrete shaft encased in an oblong rectangular steel sheet pile encasement (perimeter wall construction) filled with concrete. The sheet piling was faced with a timber fender system above the waterline.

Maximum Water Depth at Substructure Inspected: Approximately 14.9 feet.

4. WATERLINE DATUM

Water Level Reference: The top of the steel sheeting pile encasement on the downstream end of Pier 4.

Water Surface: The waterline was approximately 11.6 feet below reference. Waterline Elevation = 725.4.

5. NBIS CODING INFORMATION (Minnesota specific codes are used for 92B and 113)

Item 60: Substructure: Code 7

Item 61: Channel and Channel Protection: Code 8

Item 92B: Underwater Inspection: Code B/08/07

Item 113: Scour Critical Bridges: Code C/95

Bridge is scour critical because abutment or pier foundation is rated as unstable due to observed scour at bridge site.

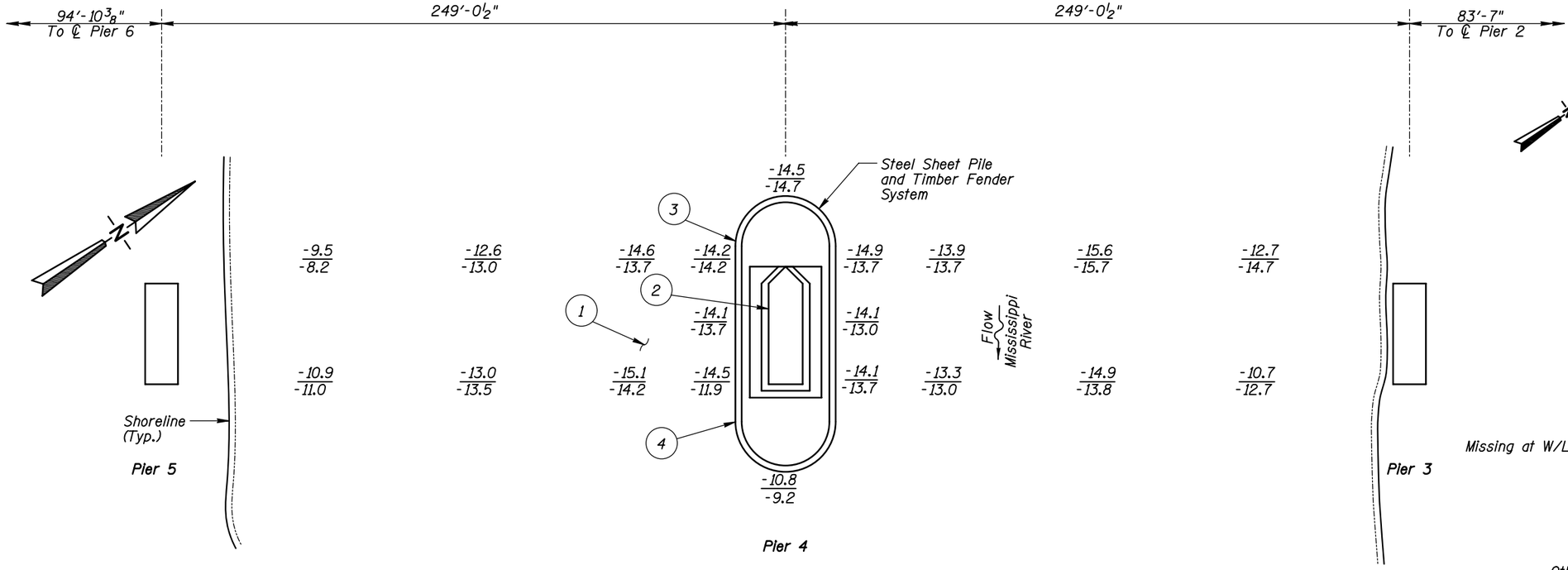
_____ Yes X No

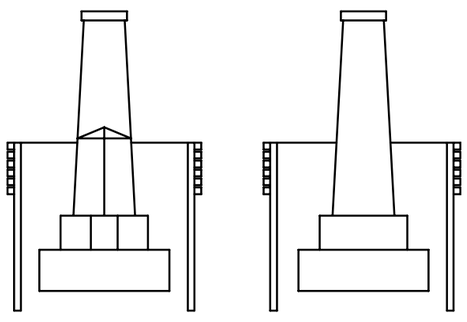
Photograph 1. View of Downstream End of Pier 4, Looking North.


Photograph 2. View of Damaged Fender System at Upstream Half of Pier 4, Looking West.

Photograph 3. View of the Damaged Fender System at Upstream Nose of Pier 4, Looking East.

Photograph 4. View of the Damaged Fender System at Downstream Half of Pier 4, Looking East.





TYPICAL END VIEW OF PIER 4

INSPECTION NOTES:

1. The channel bottom material consisted of sand, gravel and areas of riprap, 3 feet diameter and smaller, with 2 inches of probe rod penetration.
2. The above water concrete was in satisfactory condition with random minor section loss having up to 2 inch penetrations, random map cracking with efflorescence and rust staining.
3. The steel sheeting encasing the concrete pier below water displayed a 1/8 inch layer of light to moderate corrosion, random 1 inch diameter rust nodules, and random 1/8 inch deep pitting.
4. Fender system timber whalers were in fair to poor condition with some areas of decay and rot at the waterline and several failed connections. Moderate impact damage was evident in several locations around the pier perimeter. (See Fender Damage Plan).
5. The channel bottom material at downstream half of west side of pier 4 consisted of a sand layer on top of riprap with 2 inches of probe rod penetration.

Legend

-2.0	Sounding Depth (08/30/07)
-5.2	Sounding Depth (10/01/02)

Note
All soundings based on 2007 waterline location.

GENERAL NOTES:

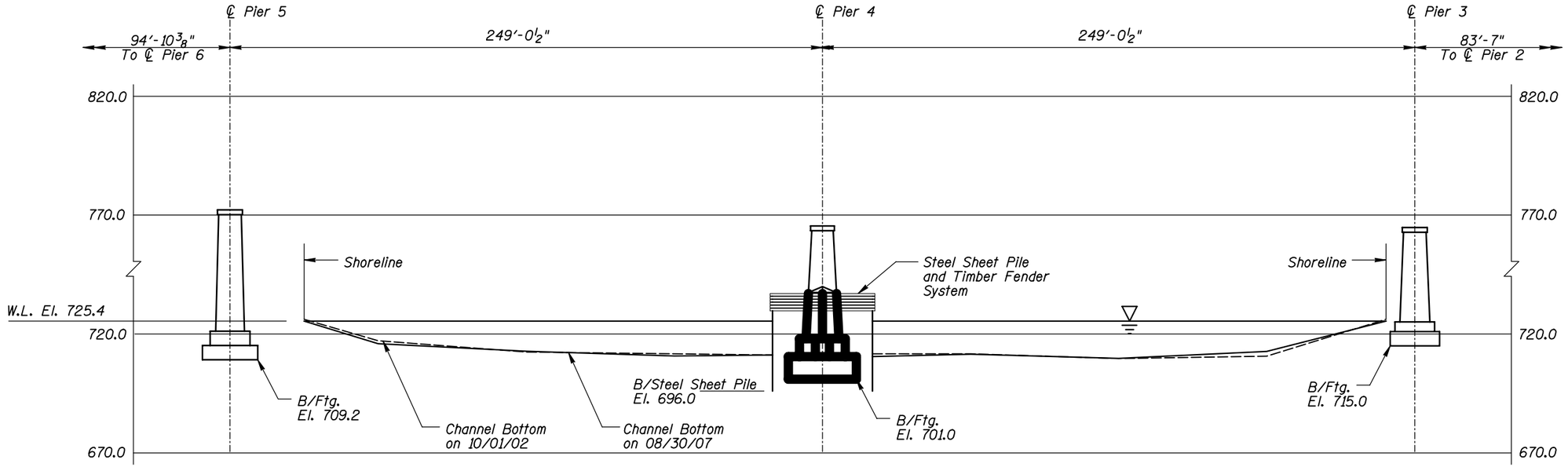
1. Pier 4 was inspected underwater.
2. At the time of inspection on August 30, 2007 the waterline was located approximately 11.6 feet below the top of the steel sheet pile fender system at the downstream end. This corresponds to a waterline elevation of 725.4.
3. Soundings indicate the water depth at the time of inspection and are measured in feet.
4. Soundings were taken parallel to the bridge at 1/4 point intervals between the substructure units.

MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

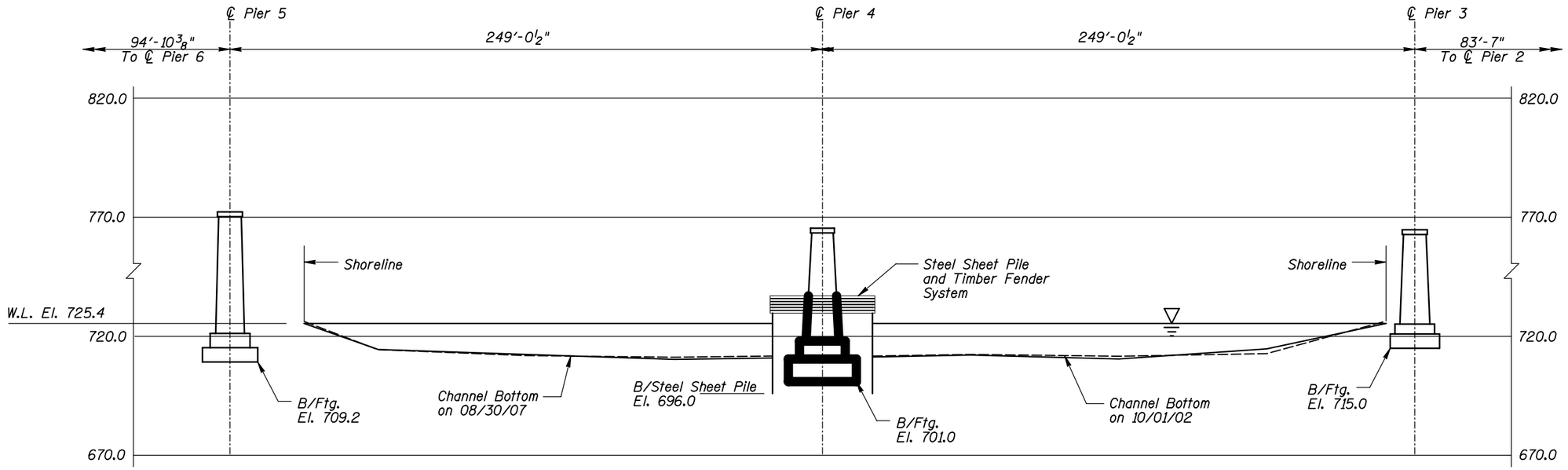
STRUCTURE NO. 94246
OVER THE MISSISSIPPI RIVER
DISTRICT 5, HENNEPIN COUNTY

INSPECTION AND SOUNDING PLAN

Drawn By: DR	COLLINS ENGINEERS INC 123 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com	Date: AUG. 2007
Checked By: DGS		Scale: NTS
Code: 5221018A	ILLINOIS PROFESSIONAL DESIGN FIRM LICENSE NO. 184-000993	Figure No.: 1



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Note:

Refer to Figure 1 for General Notes.

MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

STRUCTURE NO. 94246
OVER THE MISSISSIPPI RIVER
DISTRICT 5, HENNEPIN COUNTY

UPSTREAM AND DOWNSTREAM FASCIA PROFILES

Drawn By: DR	COLLINS ENGINEERS INC	Date: AUG. 2007
Checked By: DGS		Scale: 1"=50'
Code: 5221018A		Figure No.: 2

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ILLINOIS PROFESSIONAL DESIGN FIRM LICENSE NO. 184-000993

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES
DAILY DIVING REPORT

INSPECTORS: Collins Engineers, Inc. DATE: August 30, 2007
ON-SITE TEAM LEADER: Daniel G. Stromberg, P.E., S.E.
BRIDGE NO: 94246 WEATHER: Sunny, ±65° F
WATERWAY CROSSED: Mississippi River
DIVING OPERATION: _____ SCUBA X SURFACE SUPPLIED AIR
_____ OTHER
PERSONNEL: Todd Demski, John J. Loftus, Valerie Roustan.
EQUIPMENT: Scuba, U/W Light, Scraper, Probe Rod, Boat, Camera, Fathometer
TIME IN WATER: 10:50 A.M.
TIME OUT OF WATER: 11:45 A.M.
WATERWAY DATA: VELOCITY ± 1.0 f.p.s.
VISIBILITY 0.5 feet
DEPTH 14.9 feet maximum at Pier 4
ELEMENTS INSPECTED: Pier 4
REMARKS: Overall, the steel sheet pile encasement construction around Pier 4 was in good condition with uniform moderate corrosion, 1/8 inch scale delamination, and random 1 inch diameter rust nodules with 1/8 inch deep pitting. Above water, the timber fender system was in fair to poor condition with several areas of decay/rot, impact damage, missing members, and failed connections. The above water concrete exhibited random minor areas of section loss having 2 inch maximum penetrations.

FURTHER ACTION NEEDED: _____ YES X (*) NO

* Depending on the proposed future use of the structure, consideration can be given to replacing the missing, deteriorated and damaged timber fender components during normal maintenance operations.

Reinspect the submerged substructure unit at the normal maximum recommended (NBIS) interval of five (5) years.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES

UNDERWATER INSPECTION CONDITION RATING FORM

BRIDGE NO. 94246
INSPECTORS Collins Engineers, Inc.
ON-SITE TEAM LEADER Daniel G. Stromberg, P.E., S.E.
WATERWAY CROSSED Mississippi River

INSPECTION DATE August 30, 2007

NOTE: USE ALL APPLICABLE CONDITION DEFINITIONS AS DEFINED IN THE MINNESOTA RECORDING AND CODING GUIDE INCLUDING GENERAL, SUBSTRUCTURE, CHANNEL AND PROTECTION, AND CULVERTS AND WALL DEFINITIONS TO COMPLETE THIS FORM.

CONDITION RATING

			SUBSTRUCTURE						CHANNEL					GENERAL					
UNIT REFERENCE NO.	UNIT DESCRIPTION	MAXIMUM DEPTH OF WATER	PILING	COLUMNS, SHAFTS, OR FACES*	FOOTINGS	DISPLACEMENT	OTHER (TIMBER FENDERS)	OVERALL SUBSTRUCTURE CONDITION CODE*	SCOUR	EMBANKMENT EROSION	EMBANKMENT PROTECTION	OTHER (DRIFT/DEBRIS)	OVERALL CHANNEL & PROTECTION CONDITION	CONCRETE	STEEL	TIMBER	LOSS OF SECTION	PREVIOUS REPAIR OR MAINTENANCE	OTHER
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Pier 4	14.9’	7	7	N	9	5	7	8	8	7	N	8	N	7	5	7	N	N

*UNDERWATER PORTION ONLY

REMARKS: Overall, the steel sheet pile encasement construction around Pier 4 was in good condition with uniform moderate corrosion, 1/8 inch scale delamination, and random 1 inch diameter rust nodules with 1/8 inch deep pitting. Above water, the timber fender system was in fair to poor condition with several areas of decay/rot, impact damage, missing members, and failed connections. The above water concrete exhibited random minor areas of section loss having 2 inch maximum penetrations.

NOTES: ATTACH SKETCHES AS NEEDED, IDENTIFY REMARK BY REFERRING TO UNIT REFERENCE NO. AND REMARK NO.
USE GENERAL SECTION TO IDENTIFY OVERALL PRESENCE OF SPALLS, CRACKS, CORROSION, ETC.